

REMARKS

This Amendment is responsive to the Office Action of February 28, 2003.

Reconsideration of the rejections of claims 1-4, 9, 10, 17 and 18 and objections to claims 5-8, 11-16 and 19-21 is respectfully requested. Claim 17 is hereby amended. An error in claim 9 has been corrected. In consideration of the amendment and the following remarks, reconsideration of claims 1-21 is respectfully requested.

The §112 Rejection

The Examiner has rejected Claims 17 under §112, noting the element “said light conduit” in Claim 17 lacks antecedent basis. Applicant has amended Claim 17, and reconsideration is requested.

The §102 Rejections

Reconsideration of the rejection of Claims 1 through 4 as being anticipated under 35 U.S.C. §102 over U.S. Patent 5,604,587 to Che is respectfully requested.

Claim 1 expressly requires a first light source arranged to direct light through the walls and into the liquid core of the flexible tube. Claim 2 further requires the flexible tube to be configured into a coil and the light source to be arranged in the coil. Claim 4 further requires the flexible tube to be wrapped around a support tube and the light source to be disposed at least partially within the tube. None of these features is shown or reasonably suggested in Che et al.

In Che et al., a laser light source is used to transmit a highly focused beam of monochromatic light into the core of the flexible tube from “an end of the waveguide” Column 8, lines 6 to 7. Moreover, the flexible tube of the Che et al. device is clad both on its inside surface (column 3, lines 21 to 32) and its outside surface (column 3, lines 35 to 48) to prevent light from passing through the walls of the tube. In addition, a protective jacket made from stainless steel or other suitable material is provided on the outside of the outer cladding to further protect the tube. Accordingly, this patent does not reasonably disclose a liquid core waveguide in which a light source is arranged to direct light through the walls and into the liquid core of the flexible tube of the flexible tube, as specified in claim 1.

In addition, because Che uses a highly focused beam of laser light as his excitation source, because Che's object is to transmit this highly focused beam of light into the tube core through an end of the waveguide, and because the tube claddings and protective covering on Che's flexible tube would prevent light from passing through the tube walls, it would not be possible to direct Che's excitation light through the walls of his flexible tube and into the interior of the tube core, either.

Therefore, the Che et al. patent neither discloses nor suggests the liquid core wave guide of claims 1 to 4, and reconsideration is requested.

The §103 Rejections

Reconsideration of the rejection of 9, 10, 17 and 18 as obvious under 35 U.S.C. §103(a) over Che et al. further in view of U.S. Patent 3,770,350 to Stone is respectfully requested.

The Office Action states that it would have been obvious at the time of invention to one of ordinary skill in the art to modify the Che et al. device with the beam-splitter and lens disclosed in Stone et al. However, it is respectfully submitted that to establish a prima facie case of obviousness under 35 U.S.C. § 103 the combined references **must teach each and every claim limitation or element** of the rejected claims. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Additionally, MPEP §2143.03 reads, "if an independent claim is not obvious under 35 U.S.C. §103, then any claim depending therefrom is not obvious." In re Fine, 837 F.2d 1071 (Fed. Cir. 1988). As illustrated below, even if Che is combined with Stone, the references do not teach all of the limitations of Applicants' claims 9,10,17-18.

Claim 9

The additionally cited Stone patent fails to remedy the defects of Che for two reasons. First, Stone, like Che, discloses light transmitted into the interior of the liquid core optical fiber through the end of the fiber, not through its walls. Therefore, even considered in combination, these references fail to suggest an important feature of claim 1 of the present invention, i.e. that the light source is configured to direct light through the walls of the optical fiber.

Second, Stone does not show a light splitter in communication with a coupling device on **each** end of the flexible tube, as required by claim 9. Nor does the light splitter couple light transmissions from **both** of these light coupling devices, as further required by claim 9. Accordingly, claim 9 is not obvious.

Claims 10, 17, and 18

Claim 10, 17 and 18 expressly require a GRIN lens. A GRIN lens has a refractive index that varies continuously as a function of the spatial coordinates in the medium. See the attached pages for two internet sources describing the GRIN lens. Therefore, even when combined, Che and Stone do not suggest the invention of claims 10,17 and 18. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974) (The combined references **must teach each and every claim limitation or element** of a claim to make out a prima facie case of obviousness). Accordingly, claims 10, 17 and 18 are not obvious.

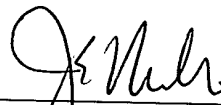
Allowable Subject Matter

The Examiner's indication of allowable subject matter in Claims 5-8, 11-16 and 19-21 is acknowledged and appreciated. However, the Applicant believes the arguments made above now place the base claims in condition for allowance, and thus rewriting claims 5-8, 11-16 and 19-21 in independent form is unnecessary. Reconsideration is respectfully requested.

CONCLUSION

For the reasons set forth above, Claims 1-21 patentably and unobviously distinguish over the references of record and are in condition for allowance. Notice to that effect is respectfully requested. If any fee is due with this response, please charge our Deposit Account No. 03-0172.

Respectfully submitted,



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